IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

HONEYWELL INTERNATIONAL INC. and HONEYWELL INTELLECTUAL PROPERTIES INC.,	)	
Plaintiffs,	)	
v.	)	C.A. No. 04-1338- JJF (Consolidated)
APPLE COMPUTER, INC., et al.,	)	
Defendants.	)	

HONEYWELL'S OPENING CLAIM CONSTRUCTION BRIEF
REGARDING U.S. PATENT NUMBER 5,280,371

MORRIS, NICHOLS, ARSHT & TUNNELL LLP
Thomas C. Grimm (#1098)
Benjamin J. Schladweiler (#4601)
1201 N. Market Street
P.O. Box 1347
Wilmington, DE 19899-1347
(302) 658-9200
tgrimm@mnat.com
bschladweiler@mnat.com

Attorneys for Plaintiffs

OF COUNSEL:

Martin R. Lueck
Matthew L. Woods
Stacie E. Oberts
Denise S. Rahne
Peter N. Surdo
Amy N. Softich
Daniel M. White
ROBINS, KAPLAN, MILLER & CIRESI L.L.P.
2800 LaSalle Plaza
800 LaSalle Avenue
Minneapolis, MN 55402-2015
(612) 349-8500

Anthony A. Froio
Marc N. Henschke
Alan E. McKenna
Michael J. Garko
ROBINS, KAPLAN, MILLER & CIRESI L.L.P.
800 Boylston Street, 25th Floor
Boston, MA 02199
(617) 267-2300

April 25, 2008

TABLE OF CONTENTS

Page

TABLE OF CONTENTS
(continued)

Page

TABLE OF AUTHORITIES

Page(s)

CASES

TABLE OF AUTHORITIES
(continued)

Page(s)

TREATISES

Plaintiffs Honeywell Intellectual Properties Inc. and Honeywell International Inc. (collectively hereinafter "Honeywell") respectfully submit this memorandum in support of its proposed construction of claim 3 of the patent in suit, United States Patent No. 5,528,371 (the '371 patent). Ex. A ('371 patent). [1]

I. INTRODUCTION

The '371 patent claims an improved direct view liquid crystal display module ("LCD"). As the Court and the parties embark on the task of claim construction, it is important to note that, at the time of the invention over 18 years ago, devices with LCD displays were not as widespread as they are today. Honeywell's invention arose out of an effort to develop LCD displays for aircraft cockpits, a market that was able to afford such new technology before it would become commonplace in consumer electronics. Thus, Honeywell's invention predates the widespread use of consumer electronics with LCD displays such as notebook computers, cell phones, Blackberries and PDAs, and digital cameras.

In essence, Honeywell's invention provides a robust solution for redirecting the light available to the LCD towards the viewer, effectively brightening the image without additional power and without an undesirable interference pattern known as the "moiré" effect. This solution was of great interest in the 1989-90 timeframe, because it complemented the development of new liquid crystal technologies such as active-matrix panels. Honeywell's solution has stood the test of time in that it has been widely adopted in the consumer electronics industry.

---

1 Although Honeywell Intellectual Properties Inc. remains a named plaintiff, there have been some structural changes amongst the Honeywell entities, which Honeywell plans to fully address with the Court at the status conference to be scheduled in the case.

All exhibits referenced herein are contained in the Appendix to Honeywell's Opening Claim Construction Brief filed separately herewith.

In this brief, Honeywell provides the Court with an overview of the relevant LCD display technology and of the invention. Honeywell then provides the Court with its construction of the disputed claim terms to one of ordinary skill in the art at the time of the invention. Honeywell's definitions are supported by the claim language itself, the specification, the prosecution history and, should the Court require it, extrinsic evidence including expert testimony. In contrast, Defendants are taking the fundamentally different and incorrect approach of reading numerous additional limitations into claim 3 in an attempt to limit claim 3 to the disclosed preferred embodiment. Nevertheless, the intrinsic record weighs heavily in favor of construing the disputed terms in accordance with their plain and ordinary meaning and without the Defendants' unwarranted restrictions.

II. OVERVIEW OF TECHNOLOGY

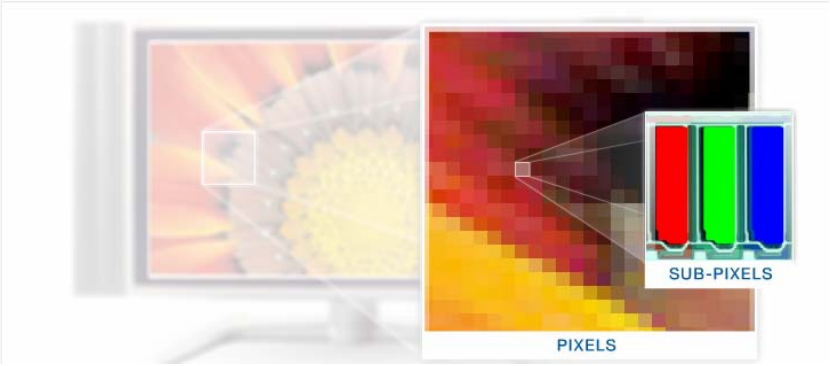
A. Liquid Crystal Panels

In general terms, the Honeywell '371 patent relates to LCD modules and the backlight used to illuminate those modules. In particular, the '371 patent teaches the use of structures known as lens arrays to more effectively direct available light to the intended viewer.

Liquid crystal panels typically contain an array of pixels—short for picture elements--that can be individually controlled as to the amount of light passing through them. The pixels turn on and off (or open and close) by controlling the electricity passing through the liquid crystal material of each pixel. This process uses polarization techniques to adjust the amount of

light passing through the pixel. By sending different voltage levels to the pixel, the pixel can be made more or less transparent, thereby allowing more or less light to pass through.[2]

In this way, each individual pixel—or, in the case of color liquid crystal panels, each individual red, green, or blue-colored sub-pixel—serves as an independently-controlled light gateway. The combination of many of these tiny pixels forms the image that the viewer sees.



See Ex. I, pp. 2-3 (Excerpts of 3M Tutorial, *Optics 101, Creating Electronic Images*).

Liquid crystal panels do not themselves generate light. The liquid crystal panels used in items such as laptops, cell phones, and digital cameras must be mated with a backlighting system to make an image visible to the user.[3] This exercise represents a design challenge for several reasons. First, in conventional settings, even in its full "transparent" mode, an LCD pixel is still fairly dark; generally, less than 10 percent of the light transmits through the pixel. Thus, to obtain a bright display, a very bright backlight is needed. All else being equal, however, making a backlight brighter requires using more power. In mobile battery-powered devices, energy

2 See generally, 3M Tutorial, Optics 101: Creating Electronic Images (2008), http://solutions.3m.com/wps/portal/3M/en_US/Vikuiti1/BrandProducts/secondary/optics101/ (excerpted and attached as Exhibit I, pp. 1-2). 3M is a leading supplier of lens arrays known as Brightness Enhancement Films ("BEF"), that are extensively used in consumer electronics products. The tutorial is an independent third party publication with an interactive functionality.

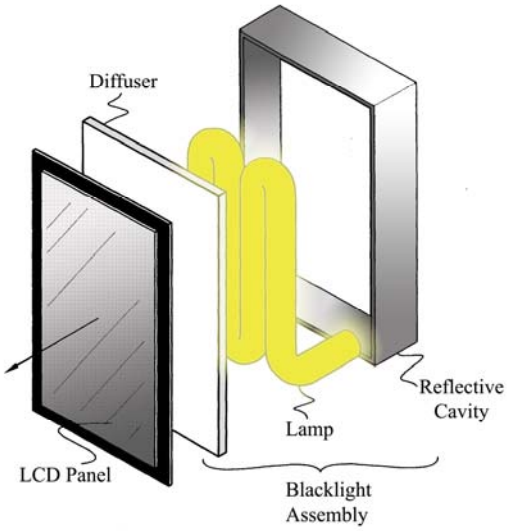
3 Some liquid crystal displays rely on ambient light instead of a backlight, as in digital watches or calculators, but ambient-lit displays are generally not high-definition/high quality displays such as those found in the modern portable consumer electronics at issue in this case.

consumption is a paramount consideration, as it ultimately impacts battery life, size, and weight. Thus, the designer of any given LCD system usually must make a trade-off decision between display brightness and energy-efficiency. Obviously, a design that would allow increases in brightness without requiring extra power and without otherwise impacting the display negatively would be prized. That is what Honeywell's invention accomplishes.

Second, liquid crystal panels have their own characteristics relating to viewing angle. Viewing angle refers to the angle from the surface of the display from which the display is viewed, typically measured in both the horizontal and vertical axes. Liquid crystal panels may be designed to be optimally viewed at angles other than directly head-on (referred to as "normal"). The light profile coming off of any given backlight assembly will necessarily be further impacted by the liquid crystal panel's angular characteristics. *See* Ex. I, p. 13 (Excerpts of 3M Tutorial, *Optics 101, Viewing Angle*).

B. The State of the Art of Backlighting in 1988 and 1989.

Various methods for providing backlighting have developed over time. At the time of the invention of the '371 patent, backlighting for LCD displays was typically a "light box"—generally some sort of light source placed inside a reflective cavity with a diffusive layer to distribute and smooth out the light emanating from the light source. A typical example of such a configuration would be a box similar to what doctors use for viewing X-rays, or that artists and graphic designers use for tracing. In the case of an LCD display, the liquid crystal panel would be placed between the light source and the viewer.

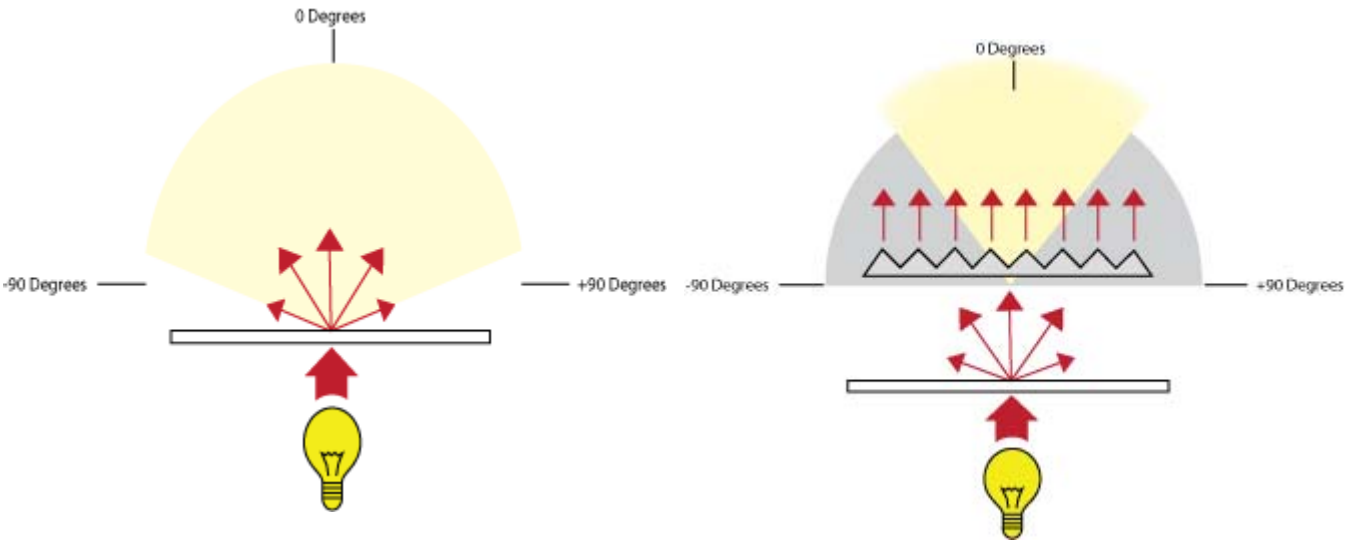


'371 Patent Fig. 1 (color added and labels modified). The diffuser illustrated above is essentially a white translucent film, and is commonly used to mask the inherent non-uniformity of the lamp (*e.g.*, bright spots, edges, and surface imperfections), and to spread the light uniformly over a desired area. But while diffusers provide these benefits, they also have drawbacks: they reduce the luminance of an already light-inefficient system, and they tend to send light to all angles—some of which may not be preferred or desirable for a particular application. As explained in the '371 patent, the diffuser

> . . . [P]rovides for a nearly equal luminance in all angular viewing directions. In most applications a 180° field of view in both horizontal and vertical directions is not required. ***It would therefore be more energy efficient if a substantial portion of the light energy could be redirected so as to be concentrated in the viewing angles of interest for a particular application***.

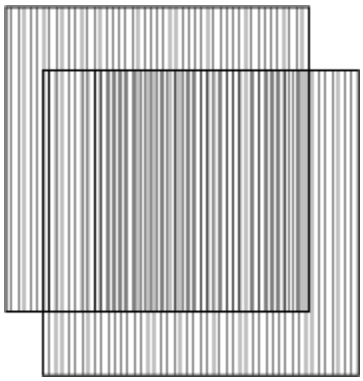
Col. 3, ll. 16-23 (emphasis added).[4] The effect of a diffuser is conceptually illustrated in the first diagram below, while the second diagram shows a desired result of one embodiment of the invention:

4 Unless otherwise indicated, all column and line references are to the '371 patent (Ex. A).



C. Moiré

Moiré is an interference pattern that is caused by two overlapping patterns, as demonstrated here:



This figures demonstrate that moiré can be created by overlapping patterns. The appearance of moiré can be explained by complicated mathematical representations relating to the phase of the overlapping patterns. Moiré interference visible on a liquid crystal display is very undesirable.

In an LCD system, the array of pixels exhibit one pattern. A conventional white diffuser combined with a liquid crystal panel would not generally produce moiré interference because the diffuser does not generally have a pattern. The addition of patterned elements to the optical system elements, however, could potentially produce moiré.

III. THE HISTORY OF THE INVENTION

Honeywell is a significant contributor to the avionics industry. In the late 1980s, it was developing technology to be used as a flat-panel avionic display. The inventors of the '371 patent were investigating whether LCDs were appropriate for such an application. Among the numerous problems that the inventors encountered was a distortion of colors that occurred when the intended liquid-crystal panel was viewed at a high angle, such as when a pilot looked at a display from a high-angle sightline. To correct for that phenomenon, the inventors investigated controlling the angles of the light that was presented to the liquid crystal panel, theorizing that if the light could be redirected to certain angles, the color distortions could be minimized. In developing the technology, the inventors discovered that using lens arrays achieved the desired directionality, while simultaneously boosting brightness of the image when viewed from that direction (gain).[5] This was an unexpected and surprising result, because conventional wisdom in the field of art at this time was that diffused light (the preferred method for backlighting a liquid crystal panel) could not be controlled in such a manner.

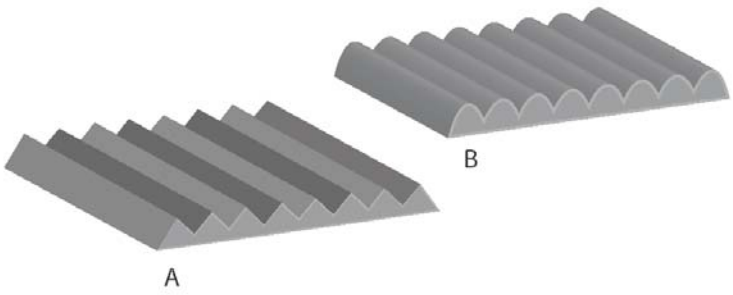
The inventors discovered, however, that using lens arrays in this manner made the LCD module prone to the undesirable moiré phenomenon. They further discovered that moiré was reduced to an acceptable level by rotating at least one lens array so that it was misaligned with respect to the pixels of the liquid crystal panel. As will be described further below, this aspect of the invention is found in the last limitation of claim 3 of the '371 patent.

---

5 At this time, the late 1980s, lens arrays existed, but were not widely recognized as a means for providing a gain in luminance. Rather, lens arrays were used as reflective material for architectural and sign/display lighting.

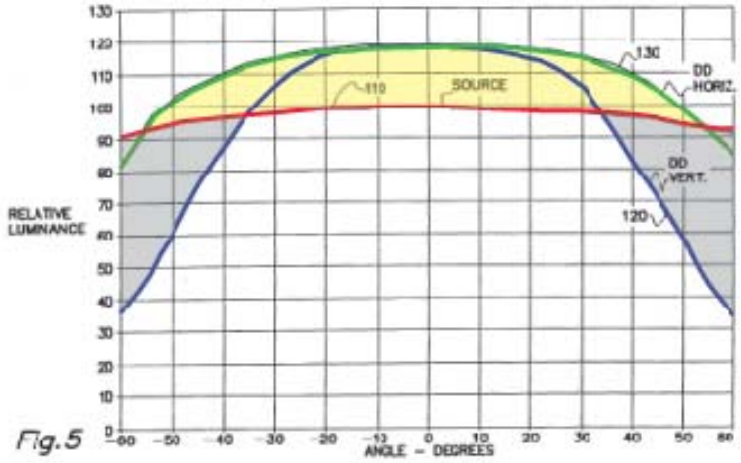
A. The Concept of Redirecting Light Through the use of Lens Arrays

As described below, a lens array redirects light to preferred angles of interest by refracting and reflecting the light rays. The result of that mechanism is that a direct-view LCD containing lens arrays appears brighter at the angles corresponding to the direction in which the lens arrays direct light. The "profile" produced by any given lens array depends on the shape of the individual lenslets and its configuration/orientation within the backlighting system. The '371 patent provides examples of the effects of two different varieties of lens arrays. As depicted below, lens arrays take many forms but generally consist of a repeating series of individual microlenses or lenslets and can be made out of many different materials.



In this illustration, a prismatic lens array is depicted as "A," and a lenticular lens array is depicted as "B." Those of ordinary skill can vary the size and shape of the lenslet/prisms, leading to a unique luminance profile. Col. 5, ll. 12-15.

The '371 patent describes that this light-redirection functionality can be performed by single or multiple lens arrays. The figure below demonstrates the effect of a single lens array:



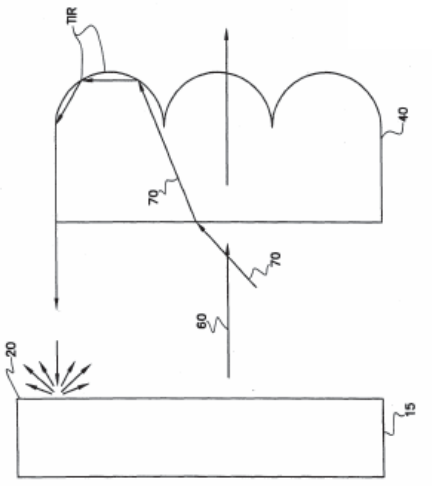
'371 Patent, Fig. 5 (color added). This graph shows a line in red, which is the light profile measured with viewing angle for a conventional backlight source. The luminance is relatively uniform across viewing angles from -60 degrees through 0 degrees to +60 degrees. Lines 120 in blue (measured by changing the viewing angle vertically) and 130 in green (measured by changing the viewing angle horizontally) show one example of the relative redistribution and angular control that the addition of a single lens array is capable of providing.

In the horizontal direction, the display appears brighter between viewing angles of plus/minus 55 degrees, beyond which the brightness decreases. In the vertical direction, the display appears brighter between viewing angles of plus/minus 35 degrees, after which the brightness decreases. Note that no additional light has been created; rather, "gain" is produced because the available light has been redirected to particular viewing angles (indicated in the yellow areas) at the expense of brightness in other angles (indicated in the grey areas).

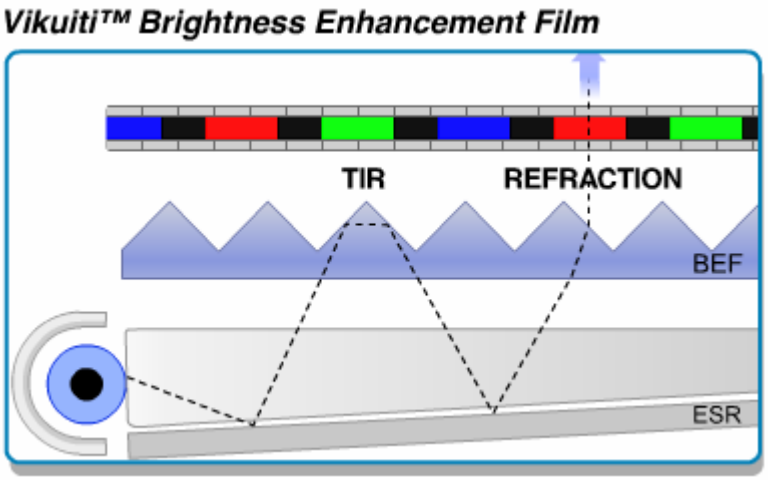
Designers can optimize the display depending on how it will be viewed. For example, portable consumer electronics, such as the ones at issue in this case, can be easily positioned in front of the intended viewer (a position referred to as "normal"). Accordingly, it would be useful to redirect most of the light both vertically and horizontally in that direction.

B. The Theory of Operation: How the Lens Arrays Redirect Light

The lens arrays described and claimed in the '371 patent tailor the light by means of refraction and reflection. Every transparent material has an index of refraction, which defines how light rays will travel in that material. Light rays traveling at angles less than the "critical angle" (which varies depending on the particular material being employed) will pass through the surface boundary of that material, but will be refracted or bent to a certain degree. Rays traveling at greater than the critical angle are reflected from the surface boundary (a process referred to as Total Internal Reflection ("TIR")), and returned to the system. The specification teaches that TIR can be optimized within the system to provide luminance gain. Rays at undesirable angles are reflected back into the system where they can be reprocessed into more desirable viewing angles—thus providing some form of light "recycling." This process is described at Column 3, line 60, through Column 4, line 16 of the '371 patent with reference to Figure 6.



This combination of refraction and reflection is also demonstrated by 3M on its website:



3M Tutorial Regarding Prism Films, http://solutions.3m.com/wps/portal/3M/en_US/Vikuiti1/BrandProducts/secondary/vikuititutorials/prismfilmstutorial/; *see also* Ex. I, pp. 8-10 (3M, *Optics 101: Brightness Enhancement Films (BEF)*).

C. The Problem of Moiré

As noted above, although introducing the lens arrays allowed the inventors to tailor the luminance profile to the desired application, it also introduced a new problem: when the inventors mated the lens arrays with a liquid crystal panel, the difference in frequency between the rows of prisms and the rows of liquid crystal pixels produced moiré patterns. One of the solutions that they devised—and ultimately claimed as part of claim 3—was misalignment of the lens arrays with respect to the moiré-producing axes of the liquid crystal pixels. This sufficiently adjusted the phase of the interfering patterns such that the moiré development was reduced to an acceptable level invisible to the naked eye. *See* Col. 5, ll. 16-28 (describing how rotation caused a "small change in the effective spatial frequency difference of the two arrays").

D. The Prosecution History

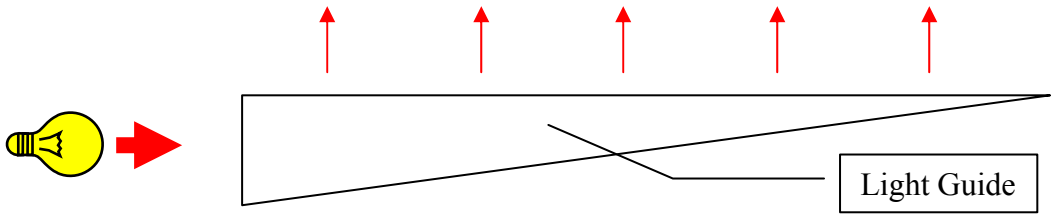
The application from which the '371 patent ultimately issued was filed in July 1992. The application included one broad independent claim and eight dependent claims covering various aspects of the disclosure, including the use of a single lens array. Significantly, none of the original claims contained any limitations on the configuration and orientation of the lens arrays (other than that they had to be between the light source and the liquid crystal panel). Similarly, none of the original claims placed limits on the particular luminance profile (the "predetermined variation") to be provided by the module.

During prosecution, Honeywell reconfigured the patent application into two independent claims, each of which claimed a combination of a two-lens-array embodiment with a moiré solution: claim 1 covers the "coarser/finer" solution discussed at Column 4, lines 35-39; and claim 3—which is the basis of the infringement assertion in the case—covers the misalignment solution. Additional details regarding the prosecution will be addressed below as they are pertinent to particular claim construction issues.

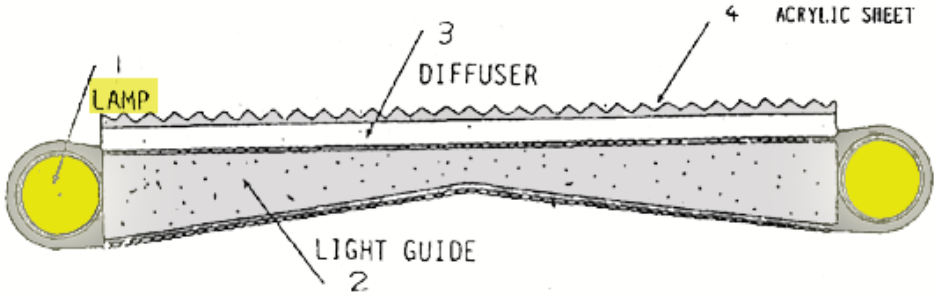
IV. LIGHT GUIDE DESIGNS

One type of backlight used in portable products is a side-lit configuration. In side-lit configurations, a light source is placed along one or more edges of the display panel instead of directly behind it, as described above for the conventional light box. In order to direct the light from the light source towards the liquid crystal panel, a light guide is used (also referred to as a light pipe or light wedge). The light guide is typically made of some sort of plastic polymer, such as acrylic. Variations on the light wedge design may include a rectangular-profiled pipe (instead of a right-triangle profiled "wedge" pipe), and the addition of extraction features may aid the emission of light generally in the direction of the liquid crystal panel. The majority of

LCD flat-panel displays for mobile electronics today use side-lit configurations, as demonstrated in the following illustration.



Such side or edge lighting is an alternative way of practicing claim 3 of the '371 patent, as demonstrated by the Patent and Trademark Office's reliance on the IBM reference, and the diagram therein, showing such edge-lighting with two lamps and a dual-wedge light guide:



Ex. G (IBM Technical Disclosure Bulletin, Vol. 33, No. 1B, June 1990 (color added)).

V. LEGAL ARGUMENT

A. The Canons of Claim Construction are Well Established, and are Focused on the Plain and Ordinary Meaning of the Claims.

This Court can and should construe the language of claim 3 in accordance with its plain and ordinary meaning, as understood by one of ordinary skill in the art. The words of a claim "are generally given their ordinary and customary meaning." *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). "In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted

meaning of commonly understood words." *Phillips*, 415 F.3d at 131. Proper claim construction requires interpretation of the entire claim in context, not a single element in isolation. *ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1090 (Fed. Cir. 2003). Similarly, general descriptive terms will ordinarily be given their full meaning, and modifiers will not be added to broad terms standing alone. *Johnson Worldwide Assoc., Inc. v. Zebco, Corp*., 175 F.3d 985,989 (Fed. Cir. 1999).

Because the focus of the claim construction analysis should remain on the meaning of the claim terms, it is improper to read limitations from the specification into the claims. *See, e.g.*, *LG Elecs., Inc. v. Bizcom Elecs., Inc.*, 453 F.3d 1364, 1376-78 (Fed. Cir. 2006) (reversing the trial court's reading of two limitations from the specification into the claims where the specification disclosed two inventions, but the relevant claim language claimed only one); *Seachange Int'l, Inc. v. C-COR Inc*, 413 F.3d 1361, 1377 (Fed. Cir. 2005); *CollegeNet, Inc. v. ApplyYourself. Inc.*, 418 F.3d 1225, 1231 (Fed. Cir. 2005). As the Federal Circuit has explained,

> [C]laims are infringed, not specifications. . . . If everything in the specification were required to be read into the claims, or if structural claims were to be limited to devices operated precisely as a specification-described embodiment is operated, there would be no need for claims . . . It is the claims that measure the invention.

SRI Int'l. Inc. v. Matsushita Elec. Corp., 775 F.2d 1107, 1121 (Fed. Cir. 1985) (en banc).

The foundation of this rule is the basic understanding that the law of patenting is intended to be reasonable. In other words, "[t]he law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention." Thus, it is black-letter and oft-repeated that "[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using

words or expressions of manifest exclusion or restriction." *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004) (distinguishing *SciMed Life Sys., Inc. v. Adv. Cardiovascular Sys., Inc.*, 242 F.3d 1337 (Fed. Cir. 2001) because the *SciMed* specification made "clear that the invention does not include a particular feature" and contained "an explicit disclaimer" of a side-by-side configuration that was described as inferior; *SciMed* did not deal with the "mere absence of any reference to that structure in the specification"); *see also Key Pharms v. Hercon Labs Corp.* 161 F. 3d 709 (Fed. Cir. 1998) (a claim to "pharmaceutically effective amount" of a drug was not limited by the specification's suggested ranges); *but cf. Ormco Corp. v. Align Tech., Inc.*, 498 F.3d 1307, 1313 (Fed Cir. 2007) (defining a claim to require a fully-automated process because the specification and prosecution history specifically criticized undesirable human involvement, and touted the invention's automated system as superior to human involvement); *Chamberlain Group, Inc. v. Lear Corp.*, 516 F.3d 1331, 1335-39 (Fed. Cir. 2008) (using specification's discussion of "binary code" and "trinary code" to limit the claim language because the patent at issue affirmatively distinguished the two and did "not permit these two terms to overlap," requiring the limiting construction); *Computer Docking Station Corp. v. Dell, Inc.*, No. 2007-1169, 2007-1316, 2008 U.S. App. LEXIS 5893,*24 (Fed. Cir. March 21, 2008) (affirming district court's finding of "a clear and unmistakable disavowal" based on the prosecution history and specification, because they distinguished laptops from microcomputer systems; therefore, the intrinsic evidence supported construction excluding laptop computers from the claimed "portable computer microprocessing system") (citing *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1343 (Fed. Cir. 2001) for the proposition that the specification may show that "the patentee has disclaimed subject matter or has otherwise limited the scope of the claims"). In cases where the intrinsic record demonstrates no "clear disavowal" of the plain and

ordinary meaning of the claim, it is not appropriate to limit the claim to the disclosed embodiments.

Finally, claims should generally be construed without recourse to extrinsic evidence. *EMI Group N. Am., Inc. v. Intel Corp.*, 157 F.3d 887, 892 (Fed. Cir. 1998). However, if necessary, dictionary definitions and other objective reference materials (such as learned treatises) available at the time that the patent was issued may also provide evidence of a claim's ordinary meaning. *See Phillips*, 415 F.3d at 1322. Likewise, expert testimony, on the other hand, may be received for the purpose of educating the judge. *EMI Group*, 157 F.3d at 892. Such testimony can include the background of the technology at issue, how a claimed invention works and the knowledge and understanding of persons skilled in the art. *Id.* at 1318; *Pfizer, Inc. v. Teva Pharms. USA, Inc.*, 429 F.3d 1364, 1374 (Fed. Cir. 2005) (expert testimony supported conclusion on understanding of persons in the art). But where the intrinsic evidence is unambiguous, "expert testimony regarding the meaning of a claim is entitled to no weight." *Vitronics*, 90 F.3d at 1584 (extrinsic evidence may not be used to contradict or vary the claim language).

B. HONEYWELL'S PROPOSED CONSTRUCTIONS ARE CONSISTENT WITH WELL ESTABLISHED CANONS OF CLAIM CONSTRUCTION AND ARE SUPPORTED BY THE INTRINSIC RECORD.

There is only one claim asserted in this suit, claim 3, which is reproduced below.

> A display apparatus comprising:
> a light source;
> a liquid crystal panel mounted adjacent to said light source for receiving light from said light source; and
> first and second lens arrays, each having a plurality of individual lenslets, disposed between said light source and said liquid crystal panel for providing a predetermined variation with viewing angle of light transmission from said light source through said lens arrays and said liquid crystal panel, wherein at least one of said first and second lens arrays is rotated about an axis perpendicular to said

liquid crystal panel in order to provide a slight misalignment between said lenslets and said liquid crystal panel.

A full copy of the parties' joint submission of disputed claim terms is attached as Exhibit C, but the competing constructions are reproduced below by claim element.

1. A display apparatus comprising

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
A display apparatus comprising:	A display apparatus is a direct view LCD module. The term comprising signifies that this claim is open-ended; it is not limited to only the recited claim elements, but covers an apparatus that contain additional unclaimed components.	A liquid crystal display (LCD) module, i.e., the light source, lens arrays and liquid crystal panel.

The dispute with regard to this phrase is threefold: first, whether the claimed apparatus is limited to a direct-view apparatus; second, whether it is appropriate to introduce later-recited elements into this preamble; and third, the meaning of the signaling term "comprising."

a. Direct-View

The claim limitation "a display apparatus comprising" means a direct view LCD module. Direct-view means that the user views the image directly from the LCD panel itself, as in cell phones or laptop computers, rather than from a projection screen that has imaged at the liquid crystal panel. The latter approach involves use of projection optics, a distinct field different from direct-view optics. As disclosed in the specification, the invention focuses on a liquid crystal panel "comprised of a number of individual liquid crystal elements which are alternatively energized in order to form a desired pattern image for viewing *from the front of the liquid crystal display*." Col. 2, ll. 51-55 (emphasis added). Indeed, the notion of the LCD's viewing angle

would have no meaning if projection optics and a projection screen were inserted between the LCD and the viewer.

Moreover, in an Amendment and Response to Office Action dated February 2, 1993, Honeywell specifically noted the significant differences between direct-view LCD displays and the separate field of projection art. Ex. B, p. 60 (Prosecution History (noting that the Abileah '783 [Ex. F] and IBM [Ex. G] references—which were from the direct-view field—could not be combined with references from the projection field); *see also* Figs. 4A and 4B (depicting the user directly viewing the panel)).[6] Thus, the prosecution history contains the type of disavowal or teaching away that, under the law, properly limits the claim to a direct-view display.

b. Later-Recited Elements

Defendants define this term to mean a liquid crystal display (LCD) module, but inexplicably add later-recited elements of claim 3 ("*i.e.*, the light source, lens arrays and liquid crystal panel") to their proposed construction. This is not a proper construction of the claim limitation. As discussed above, the words of a patent should be given their "ordinary and customary meaning." *Phillips*, 415 F.3d at 1312. Here, the phrase "[a] display apparatus comprising" constitutes simply the preamble of the claim. *Procter & Gamble Co. v. Paragon Trade Brands, Inc.*, 989 F. Supp. 547, 568 (D. Del. 1997) (quoting Chisum on Patents § 8.06[1][b] ("The preamble is an introductory phrase that may summarize the invention, its relation to the prior art, or its intended use or properties.")). The remaining language of claim 3 already includes the structures "a light source," "a liquid display panel," and "first and second

6 In the process of preparing the Joint Claim Construction Chart, the Defendants included a construction acknowledging that the apparatus was for direct viewing, but withdrew that construction shortly before filing the statement.

lens arrays," so the explicit inclusion of these elements into the preamble is not only unnecessary, but would create confusion as to whether additional elements are required.

c. Comprising

Subsequent to the joint chart presented above, the Defendants have agreed that comprising means "the claim is open-ended and does not exclude additional, unrecited elements." Honeywell does not dispute such a construction of "comprising."

2. a light source;

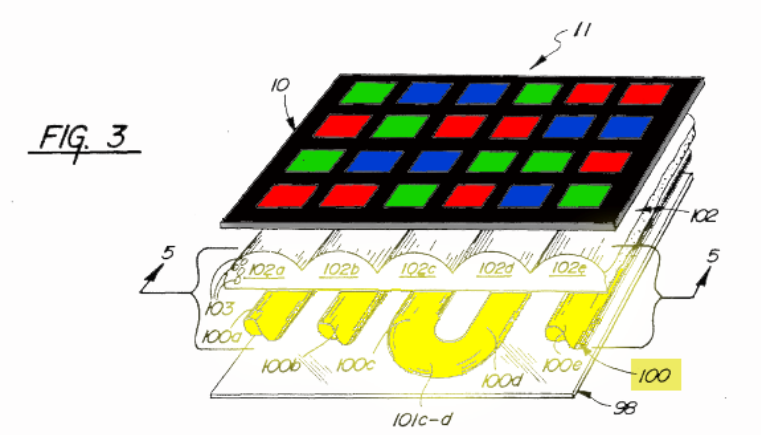
Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
a light source;	A light source for illuminating the claimed liquid crystal panel.	A source of distributed light.

The term "light source" has a plain and ordinary meaning. The ordinary meaning of the word "light" does not take any specialized knowledge to understand, nor does the word "source." They are easily understood words common to the English language. In this regard, a lamp alone is sufficient to be a light source within the meaning of the claim language because it provides a source of light.[7]

The prosecution history of the '371 patent supports the broad construction of the claimed light source that is consistent with its plain meaning. When the Patent and Trademark Office discussed another reference containing lamps, the Abileah 5,128,783 patent ("the '783 patent"), it noted that the reference teaches a "light source" as shown by the lamps (element 100), as

7 Honeywell reads this term along with the following claimed element, a liquid crystal panel "mounted adjacent to said light source for receiving light." Therefore, the proposed construction, "for illuminating the claimed liquid crystal panel" is not absolutely necessary for construing "light source," but nonetheless clarifies this element in context with the rest of the claim elements.

shown below. Ex. F ('783 patent); Ex. B, p. 53 (Prosecution History (Office Action, dated September 30, 1992, p. 2)).



Ex. F ('783 patent, Fig. 3 (color added)).

The Defendants' construction injects a concept not found in the plain meaning of the limitation, presumably in an attempt to generate a noninfringement argument: the adjective "distributed." The Defendants do not define this term, nor do they provide guidance or standards for evaluating whether a light source is "distributed" versus non-distributed. Thus, apart from being an improper restriction on the claim element, the Defendants' construction should be rejected also for unnecessarily introducing ambiguity into the claim.

The Defendants claim to rely on a passage from the specification which states, "[t]he backlight array provides a source of light." Col. 2, ll. 46-51. Yet nothing in this passage refers to "distributed" light. Defendants' construction appears to be designed to sweep the diffuser film shown in Figure 1 of the '371 patent into the claimed light source. But there is no basis for surreptitiously adding a "diffuser" element to the claim by inserting it into the construction of 'light source," given that the resulting construction is narrower than the unambiguous and plain meaning of those words.

3. a liquid crystal panel mounted adjacent to said light source for receiving light from said light source

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
a liquid crystal panel mounted adjacent to said light source for receiving light from said light source; and	A liquid crystal panel is mounted near the light source and receives light from the light source.	Defendants agree with Honeywell's construction of this limitation.

The claim term "liquid crystal panel mounted adjacent to said light source for receiving light from said light source" means "a liquid crystal panel is mounted near the light source and receives light from the light source." The parties *agree with this construction*.

4. first and second lens arrays, each having a plurality of individual lenslets,

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
first and second lens arrays, each having a plurality of individual lenslets,	A lenslet is a light-refracting structure. A lens array is a structure that contains a pattern of independently operating light refracting structures (lenslets).	**I)** Two lens arrays each consisting of a member separate from the light source and having a plurality of lenslets. **II)** The lens arrays are arranged such that the lenslets on the first and second lens arrays: **a)** face toward the liquid crystal panel; **b)** are parallel to each other, and parallel to the horizontal axis of the liquid crystal panel (aside from any "slight misalignment"); **c)** have different pitches from each other and from the liquid crystal panel; and **d)** provide a variation of light transmission with vertical viewing angle.

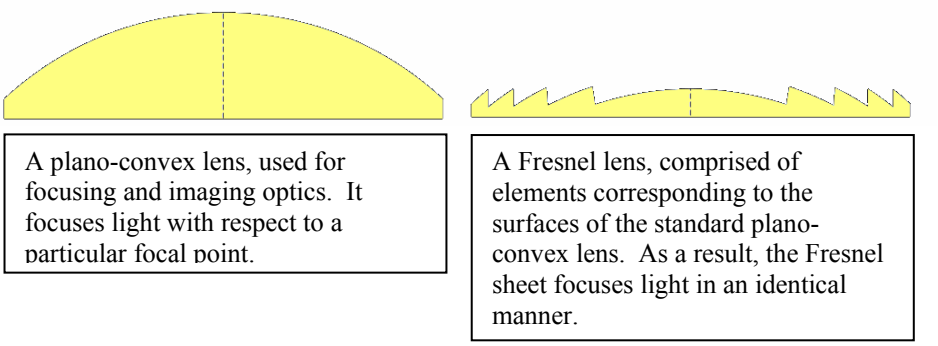
The terms "lenslets" and "lens array" in the claim element, "first and second lens arrays, each having a plurality of individual lenslets," should be construed as follows: "A lenslet is a light-refracting structure. A lens array is a structure that contains a pattern of independently operating light refracting structures (lenslets)." *E.g.*, Fig. 6; Col. 3, ll. 60-63; Fig. 7, Els. 42 and 44; Fig. 10, El. 80; Figs. 2 and 6, El. 40; Col. 5, ll. 6-15.

Even a quick glance at the Defendants' construction reveals that they are attempting to import many restrictions into this claim element that are found nowhere in the plain meaning of its terms. In fact, the dispute here is twofold: first, the Defendants offer no construction of the term "individual lenslets"—the operative structural feature of the lens arrays; and second, Defendants erroneously insist that the positioning and orientation of the lens arrays be limited to a single embodiment, despite any language in the claim to that effect, and despite any limiting language in the specification.

a. Lens Arrays Having a Plurality of Individual Lenslets

Defendants offer no construction of the term, "lenslets." However, because this term is relevant to the invalidity arguments raised by Defendants, Honeywell requests that it be construed.

The language proposed by Honeywell is intended to capture the fact that the function of the lenslets is not to focus the light to a particular image plane, but rather to orient the light rays to a particular range of angles. This is different from other types of optical structures known in the art which operate to focus light. One such structure is a Fresnel lens, which is an array comprised of sections of the surfaces of a single plano-convex lens:



Even the Defendants' experts agree that Fresnel lenses are focusing optics, where as prism arrays are non-focusing. *E.g.*, Ex. D (Schlam Report at ¶ 227(d)); Ex. E (Smith-Gillespie Report at ¶ 17). Critically, each element of a Fresnel lens acts *in concert with* the others so that the overall effect is to simulate a single plano-convex lens in sheet form. *Id.* Given that each feature of a Fresnel lens is one sub-part of the functional surfaces of a *single* plano-convex lens, the features cannot truly be considered an array of "*individual* lenslets" as found in the language of claim 3.

Indeed, the "individual" lenslets of the '371 patent are essentially working independently of each other in performing the reorientation without regard to focus or focal length. In short, the single plano-convex lens of a Fresnel lens sheet would be non-functional if implemented as "a lens array" as claimed in the '371 patent. Therefore, the term is properly construed with a limitation that accurately reflects the operation of the disclosed lens arrays, which is not to focus or image light, but rather to provide a particular luminance profile regardless of focal length or imaging. This is the reason why Honeywell's proposed construction makes clear that the multiple lenslets in the lens array are each "independently operating."

b. Orientation/Configuration of Lens Arrays

Defendants' arguments in this regard are nothing more than a naked attempt to craft non-infringement arguments by limiting the otherwise clear and broad claim language to the preferred embodiment.

i. Separate Members (Defendants' Construction in I)

Defendants first argue that each lens array must be a "member separate" from the light source, relying upon the simple fact that the preferred embodiment shows the use of separate structures. Nevertheless, there is nothing in the claim, the specification, or the prosecution history stating, or even suggesting, that these elements must be physically or structurally separate. Absent such a record, Defendants' construction disregards the well-accepted legal proposition that a single physical structure can satisfy two separate claim elements. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 1380-81 (Fed. Cir. 2000) (finding error in district court's component-by-component analysis); *Sun Studs v. ATA Equip. Leasing*, 872 F.2d 978, 988-89 (Fed. Cir. 1989) (holding that requiring a one-to-one correspondence between components in an accused structure and the elements of a patent claim was legal error); *see generally* Chisum on Patents § 18.03[4][a] (a claim reads on any device that contains all the elements of the claim, regardless of what structures contain those elements).

ii. Facing (Defendants' Construction in IIa)

The Defendants next attempt to construe the claim to require that the structured surface of the lens array face the liquid crystal panel, presumably in contrast to facing the light source. The claim is completely silent as to the direction that the lens arrays must "face."[8] There is no text in the specification referencing the orientation of the arrays, nor need there be. Under *Liebel-Flarsheim*, there is no basis for imposing such a limitation, as the '371 patent makes no clear statement that the claim should be so limited. *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d

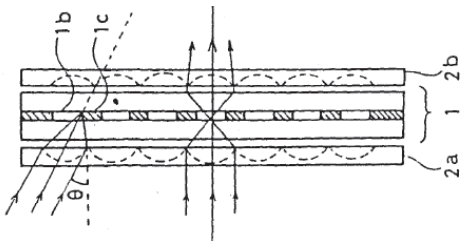
8 Defendants' use of the term "facing" is troublesome because the word has no definition or intrinsic basis in the patent. For example, a lens array "facing" either direction would optically redirect light in some way that tailored the light profile. In that sense, the lens array optically "faces" the liquid crystal panel regardless of the direction of the physical features of the lens array.

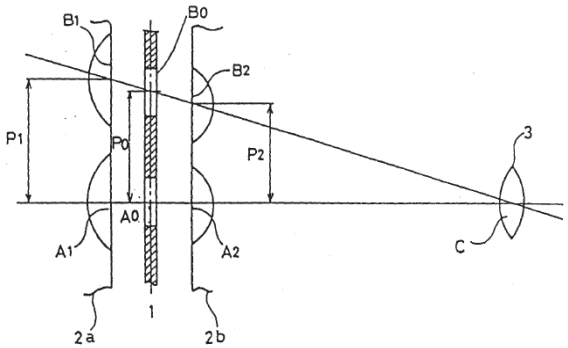
898, 906 (Fed. Cir. 2004) (holding that "[e]ven when the specification describes only a single embodiment, the claims of the patent will not be read restrictively unless the patentee has demonstrated a clear intention to limit the claim scope using words or expressions of manifest exclusion or restriction").

As discussed in the overview of technology above, all that is required to refract light is a difference in the index of refraction. That difference in the index of refraction can exist no matter what direction the lens array faces, and will consequently provide some form of control or tailoring of the light. Thus, lens arrays could be included in a LCD module in a few alternative configurations:

A lens array facing away from the liquid-crystal panel is therefore still a lens array, and there is no reason to construe it as outside the scope of this claim element.

Interestingly, the Examiner, when citing to U.S. Pat. No. 5,052,783 ("Hamada" or "'783 patent"), noted that it contained "lens arrays." *See* Ex. B, p. 53 (Prosecution History (Office Action, dated September 30, 1992, p. 2); Ex. H (Hamada). In that reference, both arrays faced *away* from the liquid crystal panel.





See Ex. B, pp. 50-53, 63-64 (Prosecution History (Office Action dated October 2, 1992 and Response to Office Action dated Feb. 23, 1993, respectively); *see also* Ex. H (Hamada Figs. 5A (prior art), 7 ('783 patent's invention)).

Finally, the Federal Circuit recently rejected an argument similar to the Defendants' in *Agfa Corporation v. Creo Products*, in which the claim term "stack" was at issue. 451 F.3d 1366, 1375-77 (Fed. Cir. 2006). Defendants argued that a "stack" of plates should be construed as only a horizontal stack, as in one plate on top of the other, because that is how the specification described and depicted the invention. *Id.* Nevertheless, the court construed "stack" broadly to include any orientation of the plates, even though the preferred embodiment depicted a horizontal stack. *Id.* One of the factors considered by the court was that the claim itself was not limiting. *Id*.

iii. Parallelism (Defendants' Construction in IIb)

The Defendants construe this claim to require that the lens arrays be arranged parallel to each other, and parallel to the horizontal axis of the liquid crystal panel. This attempt to narrow Honeywell's claim is no different than the Defendants' previous efforts. Nothing in the claim language or specification requires the lens arrays to be so configured. While the figures happen to depict such an arrangement, limiting the claims to that arrangement would again impermissibly add limitations from the preferred embodiment to the otherwise clear and unrestricted claim language. *See infra* Sections 6 and 7 (regarding controlling viewing angle in both horizontal and vertical axes).

iv. Different Pitches (Defendants' Construction in IIc)

Next, Defendants attempt to restrict claim 3 by requiring the lenslets of the two specified lens arrays to have different pitches.

The '371 patent does teach the use of two lens arrays, and also teaches that certain benefits arise when those two arrays have different pitches. Indeed, Honeywell claimed that feature—but in claim 1, not claim 3. Claim 1, not asserted in this lawsuit, recites the use of two arrays with different pitches: one greater than and one less than the pitch of the liquid crystal panel's pixels (the "coarser/finer" relationship). In contrast, claim 3 contains absolutely no language relating to pitch selection. Indeed, claim 3 makes no reference to lenslet pitch at all, making it abundantly clear that claim 3, unlike claim 1, has no requirements or limitations as to the pitches of the lens arrays. Construing claim 3 to overlap with claim 1's pitch-selection terms would thus run afoul of the doctrine of claim differentiation. Construction of independent claims should not render additional, or different, language in another independent claim superfluous. *AllVoice Comp. PLC v. Nuance Comm., Inc.,* 504 F.3d 1236, 1247 (Fed. Cir. 2007); *see also Curtiss-Wright Flow Control Corp. v. Velan, Inc*., 438 F.3d 1374, 1381 (Fed. Cir. 2006) ("claim differentiation takes on relevance in the context of a claim construction that would render additional, or different, language in another independent claim superfluous").

In sum, the Defendants' construction adds additional limitations regarding the orientation and configuration of the lens arrays. While such details may appear in some of the examples provided in the specification of the '371 patent, *none* is characterized in the specification as critical to the invention, and *none* is found in claim 3.

5. disposed between said light source and said liquid crystal panel

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
disposed between said light source and said liquid crystal panel	No Construction Necessary	Positioned between the light source and the liquid crystal panel, with a purposeful and defined air gap at the interface of the light source and the one of the lens arrays closest to the light source.

The plain and ordinary meaning of the phrase "disposed between said light source and said liquid crystal panel" does not require any construction. Nevertheless, Defendants insist that the claim be additionally limited to require "a purposeful and defined air gap at the interface of the light source" and adjacent lens array. This additional limitation is erroneous. All the claim element requires is that the lens arrays be located between the light source and the liquid crystal panel. There is nothing in the plain meaning of the limitation, or anywhere else in the language of the claim, that would cause one of ordinary skill in the art to conclude that this claim term means there must be a "purposeful and defined air gap at the interface of the light source and the one of the lens arrays closest to the light source." Indeed, nowhere in the patent specification is there any mention of an air gap anywhere that is "purposeful and defined," words that are not self explanatory in this context.

Furthermore, the only air gap mentioned in the specification is one where the lens arrays interface with the diffuser found in a particular example in the specification. Col. 3 lines 55-56. That single reference to an air gap says nothing about being "purposeful" or "defined." In any event, the claim at issue does not require a diffuser, making that sentence in the specification irrelevant to this claim limitation. Thus, the only reference to an air gap in the specification is

not even pertinent, let alone one that should be imported and elaborated upon here as a matter of claim construction.

Finally, from a definitional perspective, Defendants' experts agree that the term "air gap" simply means that the lens arrays are not optically bound to the other elements, in order to maintain a difference in the index of refraction necessary to perform the lensing function. *E.g.*, Ex. D (Schlam Report at ¶¶ 67, 148); Ex. E (Smith-Gillespie Report at ¶ 91). This need not be anything "purposeful" or "well-defined"—whatever those terms mean—but need only be an optical discontinuity sufficient to prevent a phenomenon known as wet-out. Ex. D (Schlam Report at ¶¶ 67, 148) (acknowledging that in general, a "purposeful and defined" air gap is not used or necessary in the display industry). Defendants are thus advancing a definition of "air gap" which is inconsistent with how one of ordinary skill would understand the term.

In sum, the plain and ordinary meaning of the phrase, "disposed between said light source and said liquid crystal panel," as one of ordinary skill in the art would understand it, does not require any more limiting construction.

6. for providing a predetermined variation with viewing angle of light transmission from said light source through said lens arrays and said liquid crystal panel,

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
for providing a predetermined variation with viewing angle of light transmission from said light source through said lens arrays and said liquid crystal panel,	The lens arrays provide a variation of light transmission with viewing angle; as a result of the arrays, the transmission of light through the liquid crystal panel varies with the angle from which the panel is viewed.	See II(d), *infra*. [**II)** The lens arrays are arranged such that the lenslets on the first and second lens arrays: **a)** face toward the liquid crystal panel; **b)** are parallel to each other, and parallel to the horizontal axis of the liquid crystal panel (aside from any "slight misalignment"); **c)** have different pitches from each other and from the liquid crystal panel; and **d)** provide a variation of light transmission with vertical viewing angle.]

The claim phrase "for providing a predetermined variation with viewing angle of light transmission from said light source through said lens arrays and said liquid crystal panel," refers to the angular control provided by Honeywell's invention, and means that the lens arrays provide a variation of light transmission with viewing angle. As a result of the arrays, the transmission of light through the liquid crystal panel varies with the angle from which the panel is viewed. *See e.g.*, Col. 1, ll. 8-10 (". . . a liquid crystal display (LCD) having a directional diffuser to provide a tailored variation of luminance with viewing angle."); *accord* Col. 3, ll. 19-24 ("It would therefore be more energy efficient if a substantial portion of the light energy could be redirected so as to be concentrated in the viewing angles of interest for a particular application."). Indeed, the specification makes clear that one object of the invention was to provide angular control and directionality to the light coming from the backlight.

The primary difference between the competing constructions is Defendants' insistence that the predetermined variation is limited to control in the vertical direction. Defendants errantly cite the preferred embodiment described in the specification as an absolute exclusion of effecting a predetermined variation in the horizontal direction. This is, yet again, an impermissible narrowing of the claim, turning an example from the specification into a claim limitation. The claim simply makes no mention of a particular predetermined variation, and nowhere does the specification contain a clear expression of intent to limit the scope of the invention to varying the effect of the invention only in the vertical direction. To the contrary, one of ordinary skill would understand that the claim language plainly covers variation of light transmission generally, regardless of the direction.

The language of the specification emphasizes the exemplary nature of the preferred embodiment by repeatedly referring to the fact that the embodiment is useful for the *particular* application of a side-by-side aircraft cockpit environment. It never suggests that the invention is limited to this application but instead suggests the usefulness of the invention in other applications. The Summary of Invention makes this clear. Col. 1, ll. 56-61; s*ee also* Col. 3, ll. 11, 19-23 (referencing redirecting light to "viewing angles of interest for a *particular* application"); Col. 4, ll. 46-58 (describing the preferred embodiment or addressing the horizontal and vertical viewing angles "for the *particular* embodiment in question"); Col. 5, ll. 12-15 (referencing tailoring luminance in vertical and horizontal directions "for a *particular* application") (emphasis added to all quotes). *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (stating that "persons of ordinary skill in the art rarely would confine their definitions of terms to the exact representations depicted in the embodiments," and noting that examples are often a good way to teach how to practice an invention); *see also C.R. Bard, Inc. v. United States*

Surgical Corp., 388 F.3d 858, 865, (Fed. Cir. 2004) (a patent claim term is not limited merely because the embodiments in the specification all contain a particular feature). As a result, the '371 patent and its specification were intended to instruct the individual practitioner to tailor the light output depending on the needs of the particular application.

Moreover, the '371 patent teaches in several places that the invention relates to ***both*** horizontal and vertical viewing angles, and in fact shows the impact of the lens arrays in ***both*** directions. For example, the '371 patent makes use of the theta symbol, θ, frequently. In instances where the theta symbol is discussing horizontal-specific viewing angles, it is identified as θ_H, which indicates a specific measurement related to the horizontal angle, as in Figure 4B. It is also used in reference to vertical viewing angles, as in Figure 4A and 10, where it is identified as θ_V. In this way, Figures 5, 9, and 11, demonstrate the invention in use as impacting both horizontal and vertical viewing angles. Thus, one of ordinary skill would understand, from reviewing the patent, that the "predetermined variation" depends on the particular application and the viewing angles and/or orientations of interest for that application. The specification itself explicitly teaches that this could be in the horizontal (θ_H) or the vertical (θ_V) direction.

Defendants presumably rely upon a statement in the Summary of Invention that references tailoring the light "as a function of vertical viewing angle." Col. 2, ll. 1-3. However, nothing in this passage excludes the notion of controlling for horizontal viewing angle, and as discussed above, there are a number of other passages—some from the Summary of Invention—which are clearly broader. Viewed in its entirety then, the statement is best characterized as exemplary of the particular application and primary problems Honeywell faced with the preferred embodiment. *E.g.*, Col. 1, ll. 13-17 (noting that typical LCDs exhibit wide variation of transmission of light with viewing angle, "especially the vertical viewing angle"); *see also*

Liebel-Flarsheim, 358 F.3d at 906; *see generally, supra* Section V.A (numerous cases requiring a clear disavowal of certain subject matter before limiting an otherwise broadly-written claim).

The Defendants, like in *Liebel-Flarsheim*, erroneously cite to the "mere absence" of the word "horizontal" in the Summary of Invention, which does not constitute sufficient grounds to limit the claim. Honeywell's position is more compelling than the result in *Liebel-Flarsheim* because of the numerous disclosures referencing control in horizontal and vertical directions. In *Liebel-Flarsheim*, there was no reference to the structure at issue in the entirety of the specification, and the court simply relied on the claim language.

Moreover, the Federal Circuit's *Agfa* case is directly on point, and vitiates Defendants' attempt to impose a horizontal limitation on the claim term, "lens arrays." 451 F.3d at 1375-77; *see also supra* Section V.B.4.b.ii. (regarding the orientation of the lens arrays facing the liquid crystal panel or the light source). In both instances, the specification depicted horizontally-orientated claimed elements: a stack of plates in *Agfa*, and an array of lenslets in this case. If under such circumstances, a "stack" of plates includes any orientation of the plates—and not just horizontal—then the lens arrays here should be understood to include any orientation of lenslets, and not just horizontal. *Id.*

7. wherein at least one of said first and second lens arrays is rotated about an axis perpendicular to said liquid crystal panel in order to provide a slight misalignment between said lenslets and said liquid crystal panel.

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
wherein at least one of said first and second lens arrays is rotated about an axis perpendicular to said liquid crystal panel in order to provide a slight misalignment between said lenslets and said	A slight misalignment is a misalignment of typically 2-16 degrees between an axis of the lens array and an axis of the pixel arrangement in the liquid crystal panel.	One or more of the lens arrays is intentionally rotated at an angle of not less than 2 degrees and not more than 16 degrees in relation to the horizontal axis of the liquid crystal

Claim Language	**Honeywell's Construction**	**Manufacturer Defendants' Construction**
liquid crystal panel.		panel.

Construction of this "rotated . . . slight misalignment" phrase involves two issues: first, whether there are any specific numerical bounds or limits to the word "slight;" and, second, what reference point(s) are used in determining whether the misalignment between the lenslets and the liquid crystal panel is "slight." As explained at the conclusion of this section, there is a dimensional overlap between the two issues.

a. Meaning of Slight

At the outset, it bears emphasizing that, although the claim term "slight" must be given some meaning (*i.e.*, it cannot be mere surplusage), the prosecution history did not involve any effort by Honeywell to stake its invention only to certain degrees of rotational misalignment; *i.e.*, Honeywell's original application claim 9 used the word "slight" and at no time did Honeywell argue that its invention was patentable over any particular degree of rotation. Rather, it was simply found that a particular range—typically 2 to 16 degrees—accomplished a moiré-reducing function, given the geometry and spatial frequencies of the components being used in the application:

> This residual moiré can be removed by rotating the lens array 40 with the respect to the LCD array 30, as illustrated in Fig. 12. This rotation of the lens array by a few degrees (Typically 2 to 16 degrees) from the horizontal axis causes a small change in the effective spatial frequency difference of the two arrays and thereby eliminates the residual moiré.

Col. 5, ll. 21-28.

As discussed in the specification, the slight misalignment employed by the inventors (typically 2 to 16 degrees) was suitable because of the particular geometries and spatial

frequencies of the lens arrays and liquid crystal panels being used. *See* Col. 4, ll. 17-28 (discussing how the particular pitches of the lens array and liquid crystal pixels gave rise to moiré). It stands to reason that different rotation ranges may be needed, depending on the frequencies and spacing of the elements actually being used. This is supported by Fig. 12 of the '371 patent, which uses the approximation symbol for the value of the rotated lens array's alignment (Fig. 12 ("$\theta \approx 2°$ TO 16°")). Within this typical or approximate range, one of ordinary skill would understand that the lens array was "slightly rotated." As a result, the claim definitely encompasses the range of 2 to 16 degrees.[9] Beyond that range, one of ordinary skill would understand that rotation that accomplished a moiré-reducing function might be an "atypical" misalignment, but that still falls within the claim.

Undefined measurement-related adjectives should be understood in the context of the claims and the teachings of the patent. For example, in *Innovad Inc. v. Microsoft Corporation*, 260 F.3d 1326 (Fed. Cir. 2001), the Federal Circuit considered a patent for an automatic dialer system. One of the claims recited: "a case having at least one surface for substantially enclosing a small volume." The specification related the size of the "small volume" to the function it was intended to accomplish. The Federal Circuit reversed a district court's imposition of an absolute numerical value on the term "small volume" and held that the claim language was not limited to a particular size so long as it performed its function. *Innovad*, 260 F.3d at 1333; *see also Modine Manufacturing Company v. United States International Trade Commission*, 75 F.3d 1545, 1551-52 (Fed. Cir. 1996) (for the claim term "relatively small hydraulic diameter," it was improper to impose a numerical limitation of 0.040 inches); *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570,

9 Moreover, the Defendants' attempt to introduce an "intentional" requirement introduces unnecessary subjectivity into an otherwise-objectively-worded claim.

1574 (Fed. Cir. 1985) (it is improper to read numerical precision into a claim from which it is absent); *Int'l Nickel Co., Inc. v. Ford Motor Co.*, 166 F. Supp. 551, 557 (S.D.N.Y. 1958).

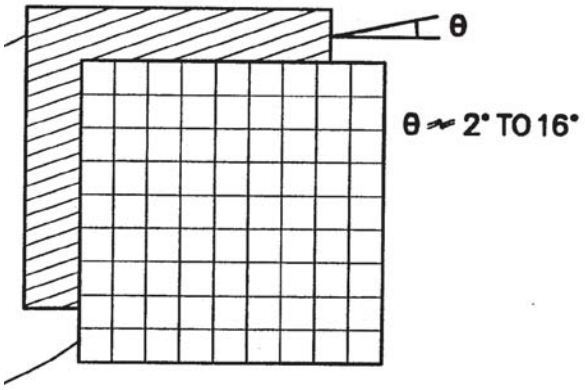
Defendants' construction of "slight" rotation rigidly between 2 and 16 degrees should thus be rejected because it ignores the express disclosures in the specification of the word "typically" and the symbol for "approximately," and the impact those words have under case law such as *Innovad*. It would set up a fallacious exercise whereby a defendant could avoid literal infringement simply by rotating 0.5 degrees beyond whatever limit it invites the Court to draw. Nothing in the specification supports such artificial boundary-drawing, especially if the rotation in question was intended to combat moiré. Honeywell's construction thus allows for the application of a proper analysis under the *Innovad* line of cases, while still honoring the express disclosures of the specification.

b. How "Slight" Misalignment is Measured

Claim 3 contains no requirement that the slight rotation be measured only with regard to the horizontal axis, as argued by the Defendants. In support of that errant construction, the Defendants cite a passage of the specification that reads: "This rotation of the lens array by a few degrees ("Typically 2 to 16") from the horizontal axis . . ." Col. 5, ll. 23-25. Nevertheless, this language is clearly exemplary. The discussion of moiré reduction in Column 5 immediately preceding this passage broadly addresses the interaction between the lens array and the entire array of the liquid crystal panel. Col. 5, ll. 21-23. ("This residual moiré can be removed by rotating the lens array 40 with respect to the LCD array 30, as illustrated in FIG. 12." (emphasis added)). It is this interaction, and any resultant moiré, which determines the reference point for evaluating the claim language.

Presumably, the Defendants will also rely on the depiction of rotation in Fig. 12, but even that drawing shows two axes for the liquid crystal panel: a horizontal *and* a vertical. As discussed herein, the '371 patent is not limited to the horizontally-aligned lens array, and one of ordinary skill interested in controlling the horizontal light profile would naturally align the lens array vertically. Correspondingly, one of ordinary skill would understand that if a vertically-aligned lens array produced undesirable moiré interference, it could be slightly rotated from the vertical axis of the liquid crystal panel.

Moreover, as discussed above, the patent uses orientation-specific notations, θ_H or θ_V, to indicate its orientation when it matters. *See* Figs. 4A and 4B. With respect to rotation, the inventors chose to notate its measurement as θ, without regard to his horizontal or vertical nature, indicating to one of ordinary skill that it could be used in either the horizontal or vertical direction (if the horizontal orientation was required, the figure would be θ_H).



'371 patent Fig. 12 (in landscape orientation).

* * *

The claim requires that the lens array(s) be rotated to create a slight misalignment between the lenslets and the liquid crystal panel. In this regard, the two issues discussed above overlap because they both address the underlying question of whether the effective spatial

frequencies—the difference between the periodic structures of the lens arrays—have been sufficiently altered. A rotation of 30 degrees from a horizontal axis could still reasonably be viewed as "slight" within the literal meaning of the claim, if that amount of rotation was necessary to change the effective spatial frequencies or if the liquid crystal panel contains an axis other than the horizontal and vertical (*e.g.*, a diagonal) that causes moiré. In both circumstances, one of ordinary skill would interpret the language of the claim and the disclosures of the specification not as setting artificial conventions on reference points, because those reference points can be relative. Rather, in both circumstances, the practitioner armed with the disclosure would look to see whether the rotation created a "small change in the effective spatial frequency difference" between the array(s). S*ee Key Pharms v. Hercon Labs Corp.* 161 F. 3d 709 (Fed. Cir. 1998) (a claim to "pharmaceutically effective amount" of a drug was not limited by the specification's suggested ranges, but rather, the court considered what would be truly effective).

VI. CONCLUSION

For all the foregoing reasons, Honeywell requests that the Court adopt its proffered claim construction. That construction honors the clear and broad language of claim 3, as read in light of those few incidences where the specification directs the invention to a particular field. In contrast, Defendants' construction repeatedly and erroneously seeks to limit the claim to the preferred embodiment without any basis in the claim language or the specification for supporting the limitations. Honeywell looks forward to addressing these issues with the Court at the upcoming *Markman* hearing.

MORRIS, NICHOLS, ARSHT & TUNNELL LLP

/s/ Thomas C. Grimm

Thomas C. Grimm (#1098)
Benjamin J. Schladweiler (#4601)
1201 N. Market Street
P.O. Box 1347
Wilmington, DE 19899-1347
(302) 658-9200
tgrimm@mnat.com
bschladweiler@mnat.com

Attorneys for Plaintiffs

OF COUNSEL:

Martin R. Lueck
Matthew L. Woods
Stacie E. Oberts
Denise S. Rahne
Peter N. Surdo
Amy N. Softich
Daniel M. White
ROBINS, KAPLAN, MILLER
& CIRESI L.L.P.
2800 LaSalle Plaza
800 LaSalle Avenue
Minneapolis, MN 55402-2015
(612) 349-8500

Anthony A. Froio
Marc N. Henschke
Alan E. McKenna
Michael J. Garko
ROBINS, KAPLAN, MILLER
& CIRESI L.L.P.
800 Boylston Street, 25th Floor
Boston, MA 02199
(617) 267-2300

April 25, 2008
2307035

CERTIFICATE OF SERVICE

I hereby certify that on April 25, 2008, I electronically filed the foregoing document with the Clerk of Court using CM/ECF, which will send notification of such filing to all registered participants.

I also certify that on April 25, 2008, I caused to be served true and correct copies of the foregoing on the following as indicated below:

BY E-MAIL:

Karen L. Pascale
YOUNG CONAWAY STARGATT
& TAYLOR, LLP
The Brandywine Building, 17th floor
1000 West Street
Wilmington, DE 19801
kpascale@ycst.com

Attorneys for Optrex America, Inc.

Philip A. Rovner
POTTER ANDERSON & CORROON LLP
Hercules Plaza, 6th Floor
1313 N. Market Street
P.O. Box 951
Wilmington, DE 19899
provner@potteranderson.com

Attorneys for FUJIFILM Corporation and FUJIFILM U.S.A., Inc.

David J. Margules
John M. Seaman
BOUCHARD MARGULES
& FRIEDLANDER, P.A.
222 Delaware Ave., Suite 1400
Wilmington DE 19801
dmargules@BMF-law.com

Attorneys for Citizen Watch Co., Ltd. and Citizen Displays Co., Ltd.

Matt Neiderman
DUANE MORRIS LLP
1100 North Market Street, 12th Floor
Wilmington, DE 19801-1246
MNeiderman@duanemorris.com

Attorneys for InnoLux Display Corporation

Richard L. Horwitz
David E. Moore
POTTER ANDERSON & CORROON LLP
Hercules Plaza, 6th Floor
1313 N. Market Street
P.O. Box 951
Wilmington, DE 19899
rhorwitz@potteranderson.com

Attorneys for Samsung SDI America, Inc. and Samsung SDI Co., Ltd.

Andrew M. Ollis
OBLON, SPIVAK, McCLELLAND, MAIER & NEUSTADT, P.C.
1940 Duke Street
Alexandria, VA 22314
aollis@oblon.com

Attorneys for Optrex America, Inc.

Stephen S. Korniczky
Elizabeth L. Brann
PAUL, HASTINGS, JANOFSKY & WALKER LLP
3579 Valley Centre Drive
San Diego, CA 92130
stephenkorniczky@paulhastings.com
elizabethbrann@paulhastings.com

Hamilton Loeb
PAUL, HASTINGS, JANOFSKY & WALKER LLP
875 15th Street, N.W.
Washington, DC 20005
hamiltonloeb@paulhastings.com

Attorneys for Samsung SDI Co., Ltd. and Samsung SDI America, Inc.

Stuart Lubitz
HOGAN & HARTSON LLP
1999 Avenue of the Stars, Suite 1400
Los Angeles, CA 90067
slubitz@hhlaw.com

Attorneys for Citizen Watch Co., Ltd. and Citizen Displays Co., Ltd.

Lawrence Rosenthal
Matthew W. Siegal
STROOCK & STROOCK & LAVAN LLP
180 Maiden Lane
New York, NY 10038-4982
lrosenthal@stroock.com
msiegal@stroock.com

Attorneys for FUJIFILM Corporation and FUJIFILM U.S.A., Inc.

Donald R. McPhail
DUANE MORRIS LLP
1667 K Street, N.W., Suite 700
Washington, DC 20006
drmcphail@duanemorris.com

Attorneys for InnoLux Display Corporation

BY FEDERAL EXPRESS

Mr. Seong Yoon Jeong
Assistant Manager
Technology Planning Group
BOE HYDIS TECHNOLOGY CO., LTD.
San 136-1, Ami-ri, Bubal-eub
Ichon-si, Gyeonggi-do 467-701
Republic of Korea

/s/ Thomas C. Grimm

Thomas C. Grimm (#1098)
tgrimm@mnat.com

734570